Table 2.3: Summary of Impacts by Alternative

	Alternative 1: No Action	**Alternative 2: Maximum Flexibility/Short Hauls**	**Alternative 3: Minimum Visual Intrusion/Long Hauls**	**Alternative 4: Phased Development of Moderate Number of Sites *(NPS Preferred)***	**Alternative 5: Economic Alternative with Moderate Hauls *(NPS Preferred)***
Natural Resources					
Air Quality	Little or no change in localized dust and exhaust emissions from ongoing gravel operations at 3 authorized sites; moderate overall impacts to air quality from fugitive dust emissions from increase in gravel hauling to 16 % of total road traffic.	Minor increase in localized dust and exhaust emissions from gravel operations at up to 9 sites (6 new). Minor increase in dust emissions from gravel hauling to 7 % of road traffic. Overall air resource impacts would be minor.	Minor increase in dust and exhaust emissions from gravel operations at up to 3 sites (1 new). Moderate increase in dust emissions from 12 % of road traffic from gravel hauling traffic. Overall impacts to air resources would be moderate overall.	Minor increase in dust and exhaust emissions from gravel operations at up to 6 sites (4 new). Minor increase in dust and exhaust emissions from 7% of road traffic from gravel hauling. Overall impacts to air resources would be minor.	Minor increase in dust and exhaust emissions from gravel operations at up to 6 sites (3 new). Minor increase in dust and exhaust emissions from 7 % of road traffic from gravel hauling. Overall impacts to air resources would be minor.
Geologic Resources	Consumption of up to 130,000 cy of gravel from in-park resources, up to 245,000 cy from external sources. Negligible slope stability, erosion, or permafrost concerns. Overall minor impacts to park geological resources.	Consumption of up to 362,500 cy of gravel from in-park resources, up to 12,500 cy from outside sources. Negligible slope stability, erosion, or permafrost concerns. Overall moderate impacts to park geological resources.	Consumption of up to 240,000 cy of gravel from in-park resources, up to 135,000 cy from outside sources. Negligible slope stability, erosion, or permafrost concerns. Overall moderate impacts to park geological resources.	Consumption of up to 362,500 cy of gravel from in-park resources, up to 12,500 cy from outside sources, same as Alternative 2. Negligible slope stability, erosion, or permafrost concerns. Overall moderate impacts to park geological resources.	Consumption of up to 362,500 cy of gravel from in-park resources, up to 12,500 cy from outside sources, same as Alternatives 2 and 4. Negligible slope stability, erosion, or permafrost concerns. Overall moderate impacts to park geological resources.

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Hydrology	Continued gravel extraction from Toklat River at rate of 7,500 cy per year, with no adverse effect on river hydrology. Negligible impacts on local hydrology at Teklanika and North Face Corner sites.	Gravel extraction from Toklat (11,100 cy/yr) and East Fork (5,400 cy/yr) at sustainable rates, with no adverse effects on river hydrology. Potential short-term effects on Moose Creek hydrology from gravel mining at Downtown Kantishna minimized through mitigation procedures, likely long-term benefits from reclamation. Negligible overall impacts to hydrology.	Gravel extraction from Toklat River at rate of up to 11,100 cy per year, with no adverse effect on river hydrology. Negligible impacts on local hydrology at Teklanika and Moose Creek Terrace sites.	Gravel extraction from Toklat and East Fork Rivers same as alternative 2, with no adverse effects on river hydrology. Minor temporary effects on Moose Creek from gravel mining at Downtown Kantishna with likely long-term benefits, as for Alternative 2. Negligible overall impacts.	Gravel extraction from Toklat and East Fork Rivers same as alternative 2, with no adverse effects on river hydrology. Minor temporary effects on Moose Creek hydrology from gravel mining at Downtown Kantishna, with likely long-term benefits. Negligible overall impacts on local hydrology.
Water Quality	Negligible water quality impacts from continued operation of 2 upland gravel sites and extraction from Toklat River channel. Continued excellent water quality in the park	Minor water quality impacts from 5 acres of surface disturbance at up to 8 gravel sites. Intermittent and localized increases in turbidity from in-channel extraction at Toklat and East Fork Rivers and gravel extraction at Downtown Kantishna.	Minor water quality impacts from 2-3 acres of surface disturbance at 3 gravel sites. Intermittent and localized increases in turbidity from in-channel extraction at Toklat River.	Minor water quality impacts from 3 acres of surface disturbance at 6 gravel sites. Intermittent and localized increases in turbidity from in-channel extraction at Toklat and East Fork and gravel extraction/ reclamation at Downtown Kantishna.	Same as Alternative 4.
Aquatic Resources	Negligible impacts to aquatic resources from continued gravel	Minor impacts to aquatic resources from gravel operations at 5 upland	Negligible impacts to aquatic resources from continued gravel	Minor impacts to aquatic resources from gravel operations at 4 upland	Minor impacts to aquatic resources, similar to Alternative 4.

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	operations at Toklat River, Teklanika and North Face Corner sites.	sites, plus East Fork and Toklat Rivers; aquatic resources in Moose Creek protected and likely enhanced by mitigation/reclamation measures at Downtown Kantishna site.	operations at Toklat River and Teklanika, and new operation at Moose Creek Terrace; continued excellent water quality in the park.	sites, plus East Fork and Toklat Rivers; aquatic resources in Moose Creek protected and likely enhanced by mitigation/reclamation measures at Downtown Kantishna site.	
Wildlife Values & Habitats	Little habitat loss and displacement, plus intermittent, localized disturbance of wildlife movements near 3 authorized gravel sites from continued operation; comparatively high potential for disturbance along road corridor from gravel hauling; moderate overall impacts.	Minor increase in habitat loss and displacement, plus intermittent, localized disturbance of wildlife movements near 8 gravel sites; comparatively low wildlife disturbance from truck traffic on park road; minor overall impacts on park wildlife resources.	Minimal increase in habitat loss and displacement, plus intermittent, localized disturbance of wildlife movements near 3 gravel sites; comparatively high wildlife disturbance from increased truck traffic on park road; moderate overall impacts on park wildlife resources.	Minor increase in habitat loss and displacement, plus intermittent, localized disturbance of wildlife movements near 6 gravel sites; comparatively low wildlife disturbance from truck traffic on park road; minor overall impacts on park wildlife resources.	Minor increase in habitat loss and displacement, plus intermittent, localized disturbance of wildlife movements near gravel sites; comparatively low wildlife disturbance from truck traffic on park road; minor overall impacts on park wildlife resources.
Vegetation & Wetlands	Permanent loss of 0.2 acres of common low shrub community at North Face Corner, plus long-term loss of minimal vegetated area at Toklat and 1 acre of low birch shrub community at Teklanika from continued	Long-term loss of 5 acres of upland vegetation from development at 8 gravel sites. Up to 19.4 acres of affected palustrine scrub-shrub, palustrine emergent and unconsolidated riverine shore or bottom wetlands, with associated loss of wetland functions.	Long-term loss of 2.6 acres of upland vegetation from development at 3 gravel sites. Up to 8.5 acres of affected palustrine scrub-shrub and unconsolidated riverine shore or bottom wetlands, with associated loss of wetland functions.	Long-term loss of 3+ acres of upland vegetation at 6 gravel sites. Up to 12.4 acres of affected palustrine scrub-shrub, palustrine emergent and unconsolidated riverine shore or bottom wetlands, with associated loss of wetland functions. Less	Long-term loss of 3+ acres of upland vegetation at 6 gravel sites. Up to 11.55 acres of affected palustrine scrub-shrub, palustrine emergent and unconsolidated riverine shore or bottom wetlands, with associated loss of wetland functions. Less

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	operation of authorized sites; minor overall impacts to vegetation. Negligible potential new impact to wetlands.	Largest wetland area and least common wetland types among the alternatives, moderate overall impacts.	Least amount of wetland area and most common wetland types among the action alternatives, minor overall impacts.	wetland area and function affected than Alternative 2; affected wetlands are common throughout park, moderate overall impacts.	wetland area, function than Alternative 2 or 4; affected wetlands are common throughout park, moderate overall impacts.
Floodplains	Negligible impacts to Toklat River floodplain resources from continued in-channel excavation.	Minor impacts to floodplain resources from continued in-channel excavation at Toklat River and same activity at East Fork River. Negligible long-term impacts to floodplains of Moose and Eldorado Creeks from restoration at Downtown Kantishna.	Negligible impacts to Toklat River floodplain resources from continued in-channel excavation, at somewhat higher annual rate.	Same as Alternative 2.	Same as Alternative 2.
Cultural Resources	No future cultural resource discoveries or impacts expected at existing approved gravel sites. Unknown potential for discovery of cultural sites not yet inventoried at external gravel sources. Negligible overall impacts.	No adverse effects on known cultural resources from development of 6 new gravel sites, and negligible potential for presence of unrecognized resources. Low potential for discovery of cultural sites at external gravel sources. Negligible overall impacts.	No adverse effects on known cultural resources from development of 1 new gravel site, and negligible potential for presence of unrecognized resources. Unknown potential for cultural sites at external gravel sources, but lower than for Alternative 1. Negligible overall impacts.	No adverse effects on known cultural resources from development of 4 new gravel sites, and negligible potential for presence of unrecognized resources. Low potential for discovery of cultural sites at external gravel sources, same as for Alternative 2. Negligible overall impacts.	No adverse effects on known cultural resources from development of 3 new gravel sites, and negligible potential for presence of unrecognized resources. Low potential for discovery of cultural sites at external gravel sources, same as for Alternative 2. Negligible overall impacts.
Social and Economic Resources					
Visitor Use & Experience	Moderate impacts on visitor experience from	Minor incremental increase to potential for	Moderate increase in potential for disturbance	Overall impacts similar to Alternative 2, but with less	Overall impacts similar to Alternative 2 or 4; less

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	increased gravel hauling activity.	disturbance of visitor experience in developed zones (road corridor), primarily from gravel operations at 6 new sites and secondarily from gravel hauling. No adverse impacts to major visitor facilities; greatest potential disturbance to Kantishna visitors, with 5 sites in area.	of the visitor experience in developed zones (road corridor), primarily from increased gravel hauling and secondarily from gravel operations at 2 existing sites and 1 new site. No adverse impacts to major visitor facilities; least potential disturbance to Kantishna visitors, with 1 site on spur road in area.	potential disturbance to Kantishna visitors from 2 sites in area.	potential disturbance to Kantishna visitors than Alternative 2, but more visible activity than Alternative 2 with use of North Face Corner.
Scenic Values	Negligible impacts to scenic values from landscape change and industrial activity at 3 existing sites, potentially visible for total of 2 miles of park road; minor impacts from increased gravel hauling on park road.	Moderate localized landscape change and increased evidence of industrial activity at 6 new sites visible for over 9 miles along road corridor; insignificant incremental change to park scenic values.	Minor localized landscape change and increased evidence of industrial activity at 1 new site not on park road and 2 existing sites visible for 2 miles along road corridor; negligible incremental change to park scenic values.	Impacts similar to Alternative 2, but somewhat less (moderate overall) as result of activity associated with 4 new gravel sites; sites visible for total of 8+ miles along park road.	Impacts similar to Alternative 2, but somewhat less (moderate overall) as result of activity associated with 3 new gravel sites and 3 existing sites; sites visible for total of 9 miles along park road.
Public Access & Safety	Insufficient in-park gravel production to meet 10-year material demand, primary reliance on external sources; greater potential for degradation of roadway condition,	Sufficient gravel production to meet 10-year material demand and support adequate road maintenance. Possible increase in visitor comfort and safety. Minor increases in safety hazards	Same as Alternative 2 with respect to gravel production, support for road maintenance, visitor safety and comfort. Greater increases in gravel hauling than Alternative 2, but minor	Same as Alternative 2 with respect to gravel production, support for road maintenance, visitor safety and comfort. No significant increases in safety hazards for park visitors or employees.	Same as Alternative 2 with respect to gravel production, support for road maintenance, visitor safety and comfort. Minor increases in safety hazards for park visitors or employees, primarily

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	especially in west end. Overall impacts potentially major.	for park visitors or employees, primarily from traffic interactions in Kantishna area.	increases in safety hazards for park visitors or employees.	Negligible impacts to visitor access and safety overall.	from traffic interactions in North Face Corner area.
Park Management	Future gravel supply not consistent with park management objectives, particularly for west end of road corridor. Large volumes of gravel hauling from external sources would increase gravel costs, wear on the park road, more road maintenance, and possible decrease in visitor vehicles under the road limits. All this would result in major impacts to park management.	Gravel supply and road maintenance support consistent with park management objectives. A small increase in traffic from gravel hauling activity and the need for temporary bridge in Kantishna would result in minor impacts to park management.	Similar to Alternative 1, except for less increase in gravel hauling traffic from external sources and source at western end of park road reduces excessive hauling at that end of the road resulting in moderate overall impacts.	Virtually the same as Alternative 2.	Virtually the same as Alternative 2.
Local Economy	Increased expenditures for purchase of gravel from external sources, with potential employment and income benefits in local economy. Possible increased costs for Kantishna businesses if road condition	Minor increase in NPS seasonal employment to operate new gravel sites; minor local economic impacts from NPS employment or external gravel purchases. No influence on visitor patterns or local service economy. Negligible	Increase in expenditures for purchase of gravel from outside sources, similar to but less than Alternative 1, with potential employment and income benefits in local economy. No influence on visitor patterns or local service economy.	Similar to Alternative 2, but with less increase in NPS seasonal employment.	Same as Alternative 4.

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	deteriorates. Minor overall impacts.	overall impacts.	Minor overall impacts.		
Subsistence	Negligible effects on wildlife and fish resources or access to them for subsistence uses.	Possible slight redistribution of wildlife from activity at 5 sites in Kantishna area, with minor effect on subsistence resources because of existing human use in the area. Overall, minor effects on subsistence resources or uses.	Similar to Alternative 2, with less overall activity in Kantishna area but minor disturbance in Moose Creek valley. Overall, minor effects on subsistence uses.	Similar to Alternative 2, with less overall activity in Kantishna area but minor disturbance in Moose Creek valley. Overall, minor effects on subsistence uses.	Similar to Alternative 2, but with less overall activity in Kantishna area and no disturbance in Moose Creek valley. Overall, negligible effects on subsistence resources or uses.
Wilderness	Gravel sites located in development zones with no direct impacts on wilderness. No new indirect impacts (noise and/or visual intrusion) on wilderness values from continued operation at existing sites, but additional noise from increased gravel hauling. Minor overall impacts on wilderness values.	Additional noise and/or visual intrusion in wilderness areas near park road corridor, from operations at 6 new sites and gravel hauling. Minor effects on wilderness values from incremental addition to extent of existing noise from developed areas.	Impacts similar to Alternative 1, but with 1 additional gravel site and somewhat less hauling activity on park road. Minor effects on wilderness values from incremental addition to extent of existing noise from developed areas.	Impacts similar to Alternative 2, but with 2 fewer gravel sites. Minor effects on wilderness values from incremental addition to extent of existing noise from developed areas.	Impacts essentially the same as Alternative 4. Minor effects on wilderness values from incremental addition to extent of existing noise from developed areas.
Cumulative Impacts					
All Resources	Negligible expansion of disturbed/developed area within the park.	Minor expansion (<1 %) in disturbed/developed area in park. Negligible	Cumulative aspects of impacts similar to those for Alternative 2, except	Minor temporary increase in disturbed/developed area in park. Negligible	Cumulative impacts very similar to those for Alternative 4.

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	Moderate increase in existing traffic-related disturbance along park road. Future long-term disturbance reduced through GAP site reclamation and restoration of former sites. No change relative to area disturbed by mining in Kantishna Hills.	increase in existing traffic-related disturbance. Future long-term disturbance reduced through GAP site reclamation and restoration of former sites. Long-term reduction of area disturbed by mining in Kantishna Hills.	negligible expansion of disturbed/developed area and no change relative to area disturbed by mining in Kantishna Hills.	increase in existing traffic-related disturbance. Future long-term disturbance reduced through GAP site reclamation and restoration of former sites, including 55-acre reduction of area disturbed by mining in Kantishna Hills.	